

# The Users' Body and Their Digital Representation in Interactive Installation- a Mereological Perspective

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## Abstract

This article examines the relationship between the users' body and its digital representations in digital body interactive installations, a sub-category of digital interactive art. Due to the reflective capacity of the interfaces incorporated in these artworks, the researchers designate the connection between the body and its digital embodied image as identification, or self- identification, terms which are not contextualized and detailed, leading to theoretical misinterpretations. To approach the problem, we use an ontological branch of study- mereology, and we discuss the membership of the body within the interactive system and the connection between the users' body and the digital embodied self: component-integral relationship, functional, mandatory, and configurational, separation, encapsulation, and exchange relationships. Afterwards, we use the composition as identity thesis to show that instead of identification or self-identification, we characterize the connection between the users' body and the digital body as "partial, temporary and stationary exchange" based on active engagement, self- consciousness, and body awareness. The relevance and novelty of the article tackle two directions: first, the interdisciplinary combination of logical philosophy and digital art, and secondly, the lack of ontological explanations regarding the structural relations in digital interactive art.

**Keywords:** digital self; embodied self; interactive art; interactive installation; mereology; ontology; users.

## 1. Introduction

The predilection for the words "identity", "identification" and "self" is predominant in the general scientific discourses, and included in the artistic one. With strong roots in the sociological and psychological theories, "identity" is a buzzword which is still not enough explained, contextualized, and theorized in visual arts.

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The use of the word identity or self is often related to the practice of selfies (digital self-portraits) or to a visual identification of the spectator sustained by a cognitivist approach. In the article “Self in Art/Self as Art: Museum Selfies as Identity Work”, the authors talk about the phenomenon of selfies by attributing to it the power to create identity works which suits individual identity and the networked selves [1]. They create the bases for the identification between the spectator and the self- portrait with Lacan’s theory [2] and Goffman’ s performative and contemplative aspect of the cultural and social being [3]; self- identification and self- creation is coded in the narratives of the place in which people act, making appeal to their memories. In another book “Digital Identities. Self-Narratives”, a chapter written by Alessio Chierico “The representation of self in digital life” tackles the idea of self- reflection in digital art as a metaphor for the myth of Narcissus [4]. Further, Chierico affirms that if we talk about digital images, we talk about the lack of the referent, which is a problem in creating a theory of digital ontology and he concludes by bringing Goffman’ s theory as an argument for the mimic intention of representation. Then, according to him, identity in the digital environment is reduced to a minimal essence [4]. He does not describe or define this “minimal essence”, leaving the question of identity without precise answer. Another approach in the subject of identity and identification in digital art is rather a narrative dimension of the themes used. Exhibitions and artists’ projects revolve around images from everyday life or different social subjects that reflect the way in which people live, behave, or feel as cultural and social beings. Concerning digital art, the term of “interactive narrative” (Riedl and Bulitko [5], Rieser [6], Louchart and Aylett [7], El- Nasrl and his colleagues [8], etc.) helps in the conceptualization of identity because the users can construct by actions a narrative self-dimension. All these authors discuss the importance of memory, experiences and narrativity in constructing the self- dimension and the identity membership in interactive systems. Also, we do not identify ontological studies applied in interactive digital body installations considering the problem exposed earlier. Firstly, these studies argue self-identification as an explanation for identification or as a confirmation for the existence of the users’ body digital identity. The terms “identification” or “self-identification” are used without explaining or proving their contextual existence, from an ontological point of view. We consider that there is a lack of information on this topic and that identification cannot be just visually-based to underline or engender an identity process happening inside the interactive system. Secondly, while digital interactive installations consist of the body’s use which is the principal condition of life of the interactive artwork, the theoretical pillars that could detail an ontological substratum for users’ body identity and the identification between the users’ body and the digital image do not exist. Therefore, the main goal of the article is to place the digital interactive works of art into a theoretical framework which gives us the arguments to prove that there is no ontological total identification between the users’ body and their embodied digital self. We claim that the relationship between the two elements already mentioned is better characterised by “exchange” and “partial, temporary or stationary identification”. The second goal is to present the types of ontological relationships that are created between the components of the digital systems studied

## **2. Materials and methods**

Our object and subject of study is the interactive digital body installation, a type of interactive art installation which uses a detection algorithm, a digital interface as digital screen, and the users’ body which plays a double role: it has the capacity of bringing to life the installation because it is the trigger of launching it, and it is an object which is represented onto the digital interface, creating digital embodied representations. The first step is

to use the mereological perspective (a branch of ontology which is based on the parthood relationship between elements) to frame, to deconstruct and to show the relationships between the elements composing the digital body installation. Afterwards, we will apply the Composition as Identity method, an explanatory theory used in mathematics, logics, and practical philosophy to attest the hypothesis of the study.

### 3. Results and discussion

#### 3.1. *Digital interactive body installation as a mereological product*

Following the mereological principles, the interactive installation is a whole and the component elements are its parts. The interactive system could not exist if a certain element from its structure is not present. Decomposing the whole of the installation, we have the following parts: the space, the interface, the spectator, the body, image reflected in the interface, the technological tools used. In “Deep Walls” (2002), Figure 1, installation created by Scott Snibbe, we can observe this mereological model in its structure; the first element is the space of the installation which is precisely the space delimited by the interaction between the spectator and the interface, there are also the spectator and the screen (interface), and the digital, technological system that renders functional the interface. The most important element in this analysis is the digital image created, the reflections present on the interface. From a visual and technical point of view, the affirmation that these elements are indispensable for the interactive system is accurate. If one of these parts is missing, there will not be a system, a whole. We situate these elements at a first mereological level of system creation. At the second level, there are the parts that compose the installation and that have a more direct implication in the possibility of the existence of the work. First, there is the process of interaction between the spectator and the interface. In “Deep Walls”, persons walk into their projection beam and the interactive wall starts recording their shadow, and the shadows of those who follow. When the last person leaves the frame, the shadows replay within one of sixteen small rectangular cupboards, looping indefinitely. Without this process of interaction, the system would not even be interactive, but static and its absence could change all the essence of the system as well as its purpose. We include here also the manipulations of the body and its actions. In the process of interaction, the input of the spectator is also a part that composes this interactive whole and we translate the input in actions like moving the body, waving, jumping, as in the case of “Deep Walls”, that come from the manipulations of the body.



**Figure 1:** Deep Walls, Scott Snibbe

The second category of parts is determined by the first one, and it is closer, in the process of creation, to the exposition of the installation. We see, then, two levels: the seen and the unseen level or the uncontrollable level

since the artist or the other people cannot anticipate how the interaction will happen or what the manipulations will be. In this configuration, the digital body plays an important part. As soon as the body as part starts the interaction with the interface, it uses one of its corporeal features that are absorbed by the installation-whole. The component- integral object relationship is functional and separable. The functionality of this relationship attests those parts are in a specific spatial/temporal position to each other, a process which supports their functional role with respect to the whole. In an interactive system, the spectators find themselves in a particular position towards the interface; depending on the function of the interface they are either in front of the interface, either touching or simply manipulating it. They must be always in contact and situated in a spatial environment that fosters interaction between them. The interaction dimension supports the functional role of the parts; for the space, the role is to enhance and favorise the interactive characteristic of the installation, for the interface is to engage the spectators and to make them a part of the work of art by the features that support this appropriation and for the spectator, the role is to offer the input needed for the creation of the work of art. Each of these principal roles converges in the possibility of existence for the interactive system. The separation attribute conveys those parts can be physically disconnected, in principle, from the whole to which they are connected. For the system of art, each part of it can be excluded and can be physically disconnected from the formed whole. There are also secondary characteristics of this type of relationship that decompose the installation in its forming parts. Since there is a functional relationship between the parts of the installation (namely the interface and the body), there exists a configurational structure of the system. Secondly, the relationship between the spectators and implicitly their bodies and the installation as whole is governed by exchange. This attribute allows to exchange a part of the whole with another one, which is equivalent and that does not change the whole as such. If we replace a spectator's body with another one, it will not change the installation as a whole in the sense that its existence will still be possible. Also, the body finds its equivalent in many other different bodies, so it is a flexible part. However, this exchange even though does not influence the possibility of existence of the installation, it brings another kind of personal contribution of the spectator. Each body and each participant at the creative act have a certain way of impacting the final result by the input offered. So, from the point of view of the final product as work of art, the exchange transforms each time the installation, but from the point of view of the mere progress of the finality process there is no change; the installation still forms continuously as a living system under the exchangeable relationship between parts and whole. Another type of relationship between parts and whole is established between the interface and the installation. The interface ensures the interaction process and sustains the creation of the work of art, so its removal from the whole would be unproductive. Therefore, the relationship between the interface and the installation is a mandatory one, according to the categorization used. The interface, the spectators and their bodies, the space are visible notions, seen parts of the whole. But in the composition of the whole as such, in the case of the interactive installation, there is also the process of interaction, the gradual phenomenon of interacting with the interface for the input's materialization. We consider it also a part forming the installation as whole, one that has two dimensions: firstly, it is a result of the contextualization of the other parts of the installation, according to a setting established by the artist. Secondly, it is a continuous process where two other parts engage to create another part. (The third part will be the digital image or the reflections on the interface.) The nature of this relationship between the interactivity's process and the installation is governed by encapsulation; interactivity is encapsulated in the whole, it is not visible as object, and it is internal. Also, it is not directly accessible from the outside. So, to

access this part, one must become engaged in the whole. The interactive system is a mereological product because it is obtained by the fusion of its parts which are situated in a two levels perspective. At the first level, there are the objects that we can cease easily- the interface, the space, the technological devices, the spectators, and their bodies. At the second level, there are the parts of the system which exist because of the functional relationships between the parts themselves and between the parts and the installation as whole: the interactivity process/interaction process and the reflections or the result of the body's input on the interface. The last one becomes a seen part with the help of the interface, but its nature as a part within the whole is dual; it is also an unseen element, one that it is implicitly to be discovered but not yet revealed until the interface allows it. It is also the case of the actions or manipulations of the body that become part in the whole but that are not primary parts in composing the whole; as an artist forms the system he uses the interface, the space, and the technical devices. He knows that the participation of the spectators through their bodies will also come in filling out the work. But he does not know the types of body manipulations, actions translated into input or how the interactive process will evolve. Even though the artist provides a frame for it, and he can process in some way the multitude of possible manipulations or acts of interactions, we cannot know what kind of body manipulations or actions or how the interaction will progress in a certain case, with a certain spectator. There exists autonomy and freedom for the participant to create. Despite that the interactive frame is a given environment, the spectators can still use their creativity and have their mark on the work of art. The relationship between the installation as whole and its parts is a component- integral object type. Therefore, various other types of relationships with their characteristic develop. There are functional, mandatory, and configurational relationships. Then, we have also a relationship of separation, encapsulation and of exchange.

### **3.2. *Composition is not ontological identity***

In the mereological discourse, the composition as identity thesis claims that composition is, in fact, an identity relationship between elements [9]. One thesis is that the sum of parts that compose the whole are identical to the whole [9]. We consider this thesis valid for our case, because as we show in the relationships between elements, the installation is grounded in its elements, and the lack of one of them leads to the inexistence of the installation. The second thesis developed by the composition as identity perspective is that every part composing a whole is identical to the whole [9]. If we apply this mereological claim to the reality about which we are speaking digital interactive body installations, then we join the authors that deny its validity. The users' body, part of the system, cannot be equal to the whole system, and therefore by connection cannot be equal with the result engendered by the installation, the digital body representation. In his article "Against composition as identity", Kris McDaniel [10] argues that the process of identification is not applicable within the theory of composition as identity. The reason is that rather that identification, when composition is used for the ontology of an object, we have a relational process between parts: "Some philosophers, such as Peter van Inwagen (1994), have claimed that the view that composition is identity is incoherent. Van Inwagen cites the apparent ungrammaticality of sentences like 'the six plots are the farmer's field' as evidence for his view. (...) The claim that composition is identity is an intuition in search of a formulation." [10]. McDaniel uses the Plural Duplication Principle to prove that the composition relation cannot be an identity relation, at no level and between no parts [10]. The Plural Duplication Principle states that x and y are duplicates in the case in which there is a one-to-one correspondence between their parts and in the case in which the two wholes, x and y,

preserve the natural relations and properties. The Duplication Principle claims, practically, that duplicating the natural properties of the parts and their basic arrangements are sufficient to perfectly duplicate the properties of the whole. A duplication, according to McDaniel [10], would not explain or sustain composition as identity, but it could explain that two elements can be identical. In the relationship between the body and the digital image, we are tempted to say that the duplication occurs, firstly, by taking a part from the body and projecting it on the interface. Taking as example the installation of Lozano Hemmer, “Blow up” (2007), Figure 2, parts of the body are used to create the digital image, but not the whole body: arms, face, torso, head. As design, the installation is constructed by 2400 virtual cameras that fragment a surveillance camera view into a zoom into the exhibition space in fluid and autonomous motion. The work is intended as an exercise to underline the construction of presence through a simulated, live compound eye. These specific parts of the body, the face, the hands, or the torso are being transposed into the mirroring surface. However, we cannot consider that there is a duplication and an identity resulted from it. When the input, the parts of the body, is translated into the interface, they undergo a transformation process.



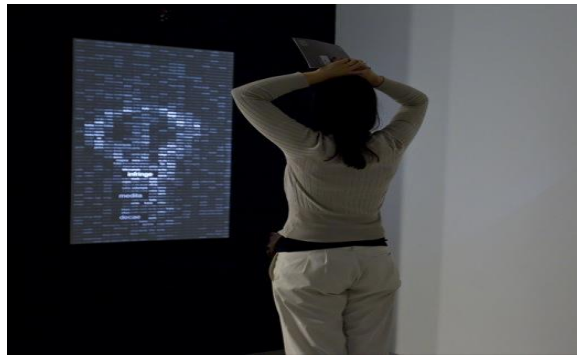
**Figure 2:** Blow up, Rafael Lozano Hemmer

We’ve already established the double role of the interface, so either the parts, by projection, are adapted at the system without being transformed, or they are transformed, they are not keeping the same natural properties as the parts from the reality. We can go to the simplest example to prove it; even though there is this connection between what is to be transformed and the result from transformation, in the case of the body, the projections are embodied, but not the same from a compositional point of view. The elements from the body occupying the space of the installation have a biological unit that the embodied selves do not respect it. The embodied selves/the digital image have a computational or digital unit. So, from the beginning, the principle of duplication cannot be applied to the interactive installations with its elements- the body and the digital image. There is no duplication to define after it the identification process because duplication would mean to keep the same natural properties and arrangements of the parts. After projection, there is no duplication, but rather a connection, a transfer, from a mereological perspective. Retaking the example of “Blow up”, the head, torso and the face cannot be identical or considered duplicated when comparing it with the digital projections. Also, because the digital projection has own properties, different from the ones of the input that generates it. In “Blow up”, the link between the body and the embodied digital self is represented by the visual appearances and by the same arrangement respected as in reality (the hand, the face etc are to be found in a certain biological arrangement as they are in a body), as well as by the actions of each part. So, until now, the duplication concept seems to be valid. However, the concept, in the case of the installations where the body is mirrored sequentially as it is, is

not functional. Firstly, there is the biological structure problem. The duplication means to keep all the natural properties of the object. For the body and the digital products appearing on the screen, it is not possible. They have separated properties as they are different ontological units. Secondly, as well as in the case of *Blow up*, but also in other installations which respect this way of creation of the digital embodied selves, the body is transformed. So, at the beginning we can cease that we identify the parts of the body on the screen, from the visual and actional point of view. But after, as the spectator performs or comes closer to the screen, the embodied self changes; there is always a fragmentation, alienation, a blurring line to be used, a desolation or simply, a transformation which does not keep the strong visual connection with the body. In *"Blow up"*, we can see that the embodied self starting to fade away by becoming a very different unit compared to the body as such; the shadow is blurry, the eyes and the face are starting to lose features etc. The spectators identify visually but after they are faced to a completely changed self as if there is no longer "me" but an "another". After this modality of change of the digital self, the fact that the body from the reality can still control the embodied self by the actions remains the only strong point of connection between the body/parts of the body and the digital embodied self/the digital image. For the installations in which the body is in a pure representation on the digital interface, without any other change on the digital embodied self, the principle of duplication is also not useful in explaining identity or identification because the first obstacle is the biological unit. It deconstructs every start of the argumentation in favor of an identification process by duplication. In the case of the digital embodied self where there is a connection between the parts of the body and the symbol-object appeared on the screen dictated by the body movements, the principle of duplication is again invalid. In the installation *"Kinect"* (2016), users can navigate the installation by the body movements. As the hand is moved, lines appear on the screen. The first obstacle which is in its strongest version, due to the inadequacy between a line and a hand, is the biological one. Then, we have the obstacle of symbolization. The line becomes a symbol for the users' hand. Then again, the only point of contact remains the body's movements. The Plural Duplication Principle is not useful to explain an identification process, rather by composition or not. There is no duplication in the interactive installations which employ digital interface because, from the mereological point of view, there are no natural properties regained in the digital image. Another thesis which joins the Duplication Principle in the attempt to explain and to reject the composition as identity theory is sustained by the indiscernibility of identicals arguments. The first argument shows that "": If composition would mean identity, then the parts are (strictly) identical to the whole [11]. But if so, then by indiscernibility of identicals, any property the parts have the whole must have as well. But the parts are many, while the whole is not. So, the parts are not identical to the whole. The transitivity and mereological analysis proved that the body, by projection and fusion, comes to be a part of the digital image. The question that appears is if a certain part of the body or the whole body can have any property that the digital image as whole has. The installation *"Third Person"* (2016), Figure 3, shows the viewer's shadow revealing hundreds of words that are in fact all the verbs of the dictionary conjugated in the third person. The portrait of the viewer is drawn in real time by active words, which appear automatically to fill his or her silhouette. The collector may choose to display the words in English, Spanish or French, or a combination of the three languages.

Firstly, the digital embodied self belongs to the second category established in the previous chapter because there is no mirroring in a one-to-one representation, but the image loses the contact with the real space and the

point of contact between the body and the digital self, at a visual level, is the shadow of the body.



**Figure 3:** Third Person, Rafael Lozano Hemmer

The digital system depicts the shadow for the digital self creation. Secondly, the digital image is composed of its parts: the embodied self, the technical and software program, the interface and by fusion and exchange, the body of the spectator. Nonetheless, according to the principle of indiscernibility, there are no identical properties between the body and the digital image/digital embodied self as whole. We have again the motility property present in both the body and the digital embodied self and transmitted by transitivity and overlapping of entities also to the digital image, but no other property is identical in this operational process. Composition as identity seems to fail again, according to this principle, in the mereological explanation of the identification process between the body and the embodied digital self. Therefore, also considering the non-applicability of the composition as identity thesis and the arguments given against it, we propose that “exchange”, as we have also discussed it in the mereological connections, represents better the relation between the users’ body and the digital embodied image, from an ontological view. The exchange contains all the inputs and outputs that appear; the actions of the body, the physical appearance of the body, its movements are the inputs that allow for the creation of the outputs which are embedded on the interface: the digital image. Due to the evanescent nature of the interactive installation, this exchange is temporal because after the users leave the interactive space, the outputs recorded onto the interface disappear, partial because there are only few features from the users’ body identity engaged in the interactive process, and stationary because it represents a part of the body’s ontological experience that has no long-term effects on its identity. There is not an ontological identification between the users’ body and the digital image, but a process of self- consciousness of the active engagement in the co-authoring process, underlined by the reflective aspect of interface.

#### **4. Limitations of the study**

We underline the fact that the study is devoted to the ontological perspective of the problem identified, but, the phenomenological view, undiscussed in the paper, could extend the clarification of the relationship between the digital image and the users’ body, and could, therefore, help in the conceptualization of self- identification. Also, the object of study is limited to the digital body interactive installation and only the theoretical methods used are applicable to other typed of interactive installations; the findings discussed completely characterize a single type of interactive installations.



## 5. Conclusions

The interactive body digital installations can be seen as a mereological product, where each of its components develop several types of ontological relationships: component- integral object, functional, mandatory, and configurational relationships. Then, we have also a relationship of separation, encapsulation and of exchange. However, even though there is a process of composition creating the digital system, composition does not allow for identification between the digital embodied representation and the human body. The relationship created between the two elements is an exchange of inputs and outputs, based on the interactive feedback of the system. Also, it has a temporary, partial, and stationary framing that leads to a body awareness construct of the active implication in the interactive system and not to an ontological identification.

## References

- [1]. R. Kozinets, et al. "Self in Art/Self as Art: Museum Selfies as Identity Work" Internet: [www.frontiersin.org/articles/10.3389/fpsyg.2017.00731/full](http://www.frontiersin.org/articles/10.3389/fpsyg.2017.00731/full) [Apr. 24, 2017].
- [2]. J. Lacan. "The Mirror Stage As Formative of the Function of the I As Revealed in Psychoanalytic Experience." in *Écrits: A Selection*, A. Sheridan, New York: W.W. Norton and Company, 1977, pp. 93-99.
- [3]. E. Goffman. *The presentation of Self in everyday life*. Edinburgh: University of Edinburgh, 1956.
- [4]. A. Cherico. "The Representation of Self in Digital Life: Digital Ontology for Digital Identity." Internet: [www.academia.edu/35996531/The\\_Representation\\_of\\_Self\\_in\\_Digital\\_Life\\_Digital\\_Ontology\\_for\\_Digital\\_Identity](http://www.academia.edu/35996531/The_Representation_of_Self_in_Digital_Life_Digital_Ontology_for_Digital_Identity) [Dec. 01, 2020].
- [5]. M. Riedl, and V. Bulitko (2012). "Interactive Narrative: An Intelligent Systems Approach." *AI Magazine*. [On-line]. 34(1). Available: <https://ojs.aaai.org/index.php/aimagazine/article/view/2449> [Apr. 4, 2021].
- [6]. M. Rieser (1997). *Interactive narratives: a form of fiction?* *Convergence: The International Journal of Research into New Media Technologies*. [On-line]. 3(1). Available: <https://journals.sagepub.com/doi/10.1177/135485659700300102> [Apr 5, 2021].
- [7]. S. Louchart, and R. Aylett (2003). "Towards a narrative theory of Virtual Reality" *Virtual Reality*. [On-line]. 7(1) Available: [https://www.researchgate.net/publication/220530284\\_Towards\\_a\\_Narrative\\_Theory\\_of\\_Virtual\\_Reality](https://www.researchgate.net/publication/220530284_Towards_a_Narrative_Theory_of_Virtual_Reality) [Apr 10, 2021].
- [8]. M. El-Nasr (2007) "Interaction, narrative, and drama: Creating an adaptive interactive narrative using performance arts theories" *Interaction Studies*. [On-line]. 8(2). Available: [https://www.researchgate.net/publication/233651644\\_Interaction\\_narrative\\_and\\_drama\\_Creating\\_an\\_adaptive\\_interactive\\_narrative\\_using\\_performance\\_arts\\_theories](https://www.researchgate.net/publication/233651644_Interaction_narrative_and_drama_Creating_an_adaptive_interactive_narrative_using_performance_arts_theories) [Apr 10, 2021].
- [9]. A.J. Cotnoir, and D. Baxter. *Composition as identity*. United Kingdom: Oxford University Press, 2014.
- [10]. K. McDaniel. "Against composition as identity". Internet: <http://analysis.oxfordjournals.org/> [May 1, 2021].
- [11]. Stanford Encyclopedia of Philosophy. "The Identity of Indiscernibles" <https://plato.stanford.edu/entries/identity-indiscernible/> [May 1, 2021]